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The name *Lower Productive coal measures*, still in use for the sake of convenience, is a purely local and relative term, without classical value. When first applied by the First Geological Survey of Pennsylvania, it was intended to include the workable productive coal beds of Western Pennsylvania with their associated strata lying between the coal measure conglomerate and the Mahoning sandstone, or base of the Barren measures. At that time the conglomerate was supposed to be one solid bed of rock, subject only to local variations in thickness and in the proportion of sandstone to conglomerate.

But within the past five years a study of it has shown it to be a variable group of hard and soft strata, including workable coal beds with their under clays. It therefore properly forms a part of the Lower Productive Coal Measure Series: and only thus can the parallelism of the Ohio and Pennsylvania sections be made good.

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*Stated Meeting, April 1, 1881.*

Present, 10 members.

Vice-President, Mr. E. K. PRICE, in the Chair.

Sig. Damiano Muoni signified his acceptance of membership, by letter dated Milan, January 20, 1881.

Mr. Joseph J. Lewis, accepted membership, by letter dated West Chester, March 24, 1881.

Letters acknowledging the receipt of Proceedings were received from the Philosophical Society at Glasgow, March 9 (106); the Fondation Teyler, Harlem, 3 Mars (105, 106 and List); the American Ethnological Society, New York, March 24 (107); and J. H. C. Coffin, Washington (107).

Letters of envoy were received from the Geological Survey of Pennsylvania, Harrisburg, March 29, and Dr. Peters, Kiel, February 23, 1881.

Dr. Nolan informed the Society by letter that a box of Indian relics had been sent to the care of the Academy of Natural Sciences, by Mrs. Haldeman, for the American Philosophical Society. On motion these were ordered to be deposited in the Academy's museum, and Dr. Horn was appointed to verify the list.

Donations for the library were reported from the Asiatic

Society of Japan; the Academies at St. Petersburg, Berlin, Rome and Philadelphia; the Bureau of Statistics of Sweden; the Zoologischer Anzeiger; Frankfurt Geographical and Statistical Association; Bordeaux Commercial Geographical Society; MM. Delesse and Lapparent, and Revue Politique of Paris; British Association, Royal Astronomical Society, Chemists' Journal and Nature; Nova Scotia Institute, Canadian Naturalist, Prof. Ed. C. Pickering, Hon. Robert C. Winthrop; the Middletown Scientific Association; the American Journal of Science; Mr. C. B. Dudley; Mr. H. C. Lewis; the Second Geological Survey of Pennsylvania, and the Johns Hopkins University.

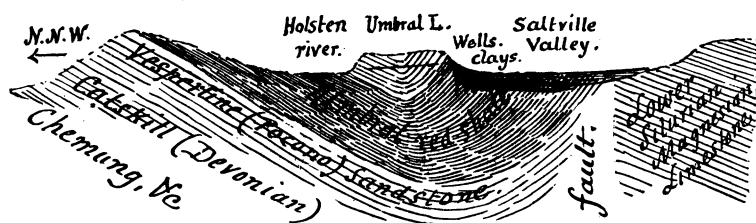
A box of Indian flints for the cabinet sent from Chicques, Lancaster County, Pa., by Mrs. Haldeman, was reported in the care of the Academy of Natural Sciences, Philadelphia.

*Rhætic flora.* The Secretary reported that he had received letters from Prof. W. M. Fontaine, of the University of Virginia, dated Charlottesville, February 21st and March 29th, respecting the publication in the Transactions of a Memoir on the Rhætic flora, and on the formation to which they belong, in Virginia and North Carolina; about 340 pp. MS. with 32 4to plates, the figures closely placed, and nearly all in outline, with only indispensable details.

Besides the descriptions of plants, the author gives "a pretty full account of the geology of the Mesozoic of Virginia, with an explanation of its peculiar features." He has "a very large collection of fine plants. Many of them are new, some exceedingly fine; and all of them, whether already described or as yet undescribed, much more perfect than any hitherto found." "The collection is a pretty fair representation of the flora of the older Mesozoic, and will throw light on the Mesozoic of North Carolina and Pennsylvania."

*Saltville fault.* The Secretary communicated the following notes by Prof. Fontaine, made in the same letters, upon the views of Mr. H. C. Lewis respecting the structure of the Saltville valley in Southern Virginia, published in the Proceedings No. 107, page 155.

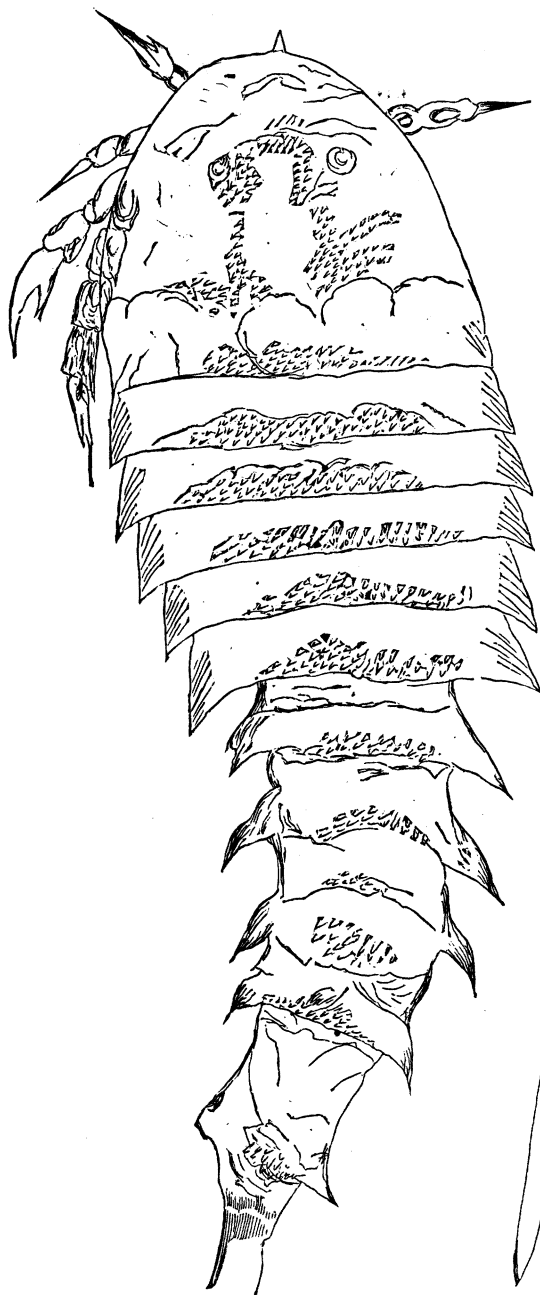
Mr. Fontaine points out that the little salt and gypsum bearing valley of Saltville cannot be "eroded along an anticlinal of Lower Silurian limestones," because the south-east wall hills only are of that age, while the north-west wall hills are of Umbral (Mauch Chuuk, Subcarboniferous) age. He was the first to find in the limestones on that side of the valley an abundance of Umbral fossils, in the highly fossiliferous shale beds intercalated between the massive limestones. The species are the same found in the Umbral near Lewisburg, West Virginia. The Magnesian (Lower Silurian) limestone strata, bounding the valley on the south-east, show no trace of fossils.



The physical aspects of the two formations also differ. Beds of shale and limestone alternate in the hills N. W. of the valleys; and some of the limestone is cherty, and some of the shales are red. But the S. E. hills contain only solid limestone strata. Those on the N. W. side have a more rounded topography.

It is, however, quite true that the stratification is in opposite S. E. and N. W. directions; gentle to the S. E. and much steeper to the N. W. The structure is therefore anticlinal. But there must be a considerable fault along the axis of the anticlinal, and this fault must run along the south-east edge of the little valley.

The explanation is then simple. The Umbral limestone ridge is a synclinal; and the red shale formation comes up on both sides of it,—with north-west dips in the little valley,—and with south-east dips in the valley of the Holsten river, at the foot of the mountain, as shown above.



EURYPTERUS FROM DARLINGTON SHALES, PENN.

A reference to the place of the Michigan Salt group in the Palæozoic series makes the presence of salt here easily understood. The horizon seems to be salt-bearing in other places in Southern Virginia. There is a salt ooze near Max Meadows, at about this geological horizon.

The Secretary suggested, in addition, that the underlying Vespertine (Pocono) sandstone is a great salt producing formation in the Ohio river up-country. That the gypsum is an acid reaction upon the eroded outcrops of the limestone he showed in Proceedings A. P. S. Vol. IX. p. 34, 1862.

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Mr. J. F. Mansfield of Cannelton, Beaver county, Pa., communicated by letter, dated House of Representatives, Harrisburg, February 4, 1881, a drawing, life size, of a fine fossil *Eurypterus* found by him in the shale immediately beneath the Darlington Cannel Coal bed, Lower Productive Coal measures, with a request to have the specimen studied and described.

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Mr. E. B. Harden exhibited two models in plaster, one geologically colored, the other uncolored, of a large part of Blair county, Pa., on a scale of 8000' : 1''; vertical scale exaggerated  $2\frac{1}{2}$  times.

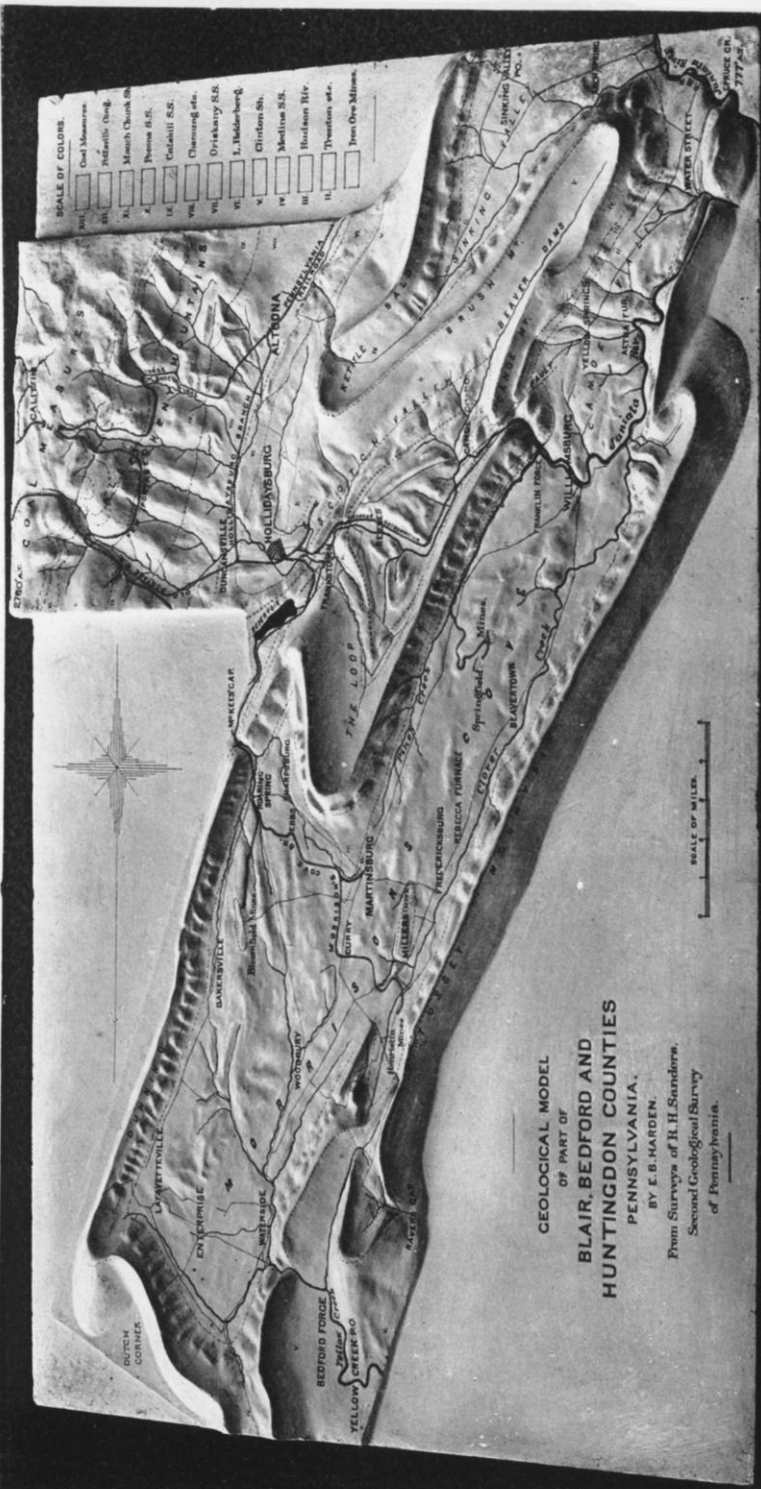
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Captain E. Y. McCauley, U. S. N., communicated for publication in the Proceedings an alphabet and syllabary of the Egyptian language, for the use of students, in 32 MS. pages, reducible to 8vo size for the Proceedings.

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The Publication Committee reported in favor of a full exchange of all publications, so far as sets could be made, with those of the Musée Guimet at Lyons, which was approved and ordered.

Pending nominations 927 to 933 were read, and the meeting was adjourned.



F. Gatekunt

Phototype